DOCUMENT RESUME

ED 469 174   TM 034 479

AUTHOR   Plumer, Gilbert E.
TITLE   On Testing for Assumption Recognition. Statistical Report.
                 LSAC Research Report Series.
INSTITUTION   Law School Admission Council, Newtown, PA.
REPORT NO   LSAC-R-97-01
PUB DATE   1999-08-00
NOTE   20p.
PUB TYPE   Opinion Papers (120)
EDRS PRICE   EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS   *College Entrance Examinations; *Criteria; Higher Education;
                 Law Schools; *Persuasive Discourse; *Test Construction
IDENTIFIERS   Argument Research; Case Arguments

ABSTRACT
                 This paper proposes criteria for determining necessary
assumptions of arguments. In their book "Evaluating Critical Thinking," S.
Norris and R. Ennis (1989) state that although it is tempting to think that
certain assumptions are logically necessary for an argument or position, they
are not. Many writers of introductory logic texts and the authors of various
highly visible tests, such as the Law School Admission Test (LSAT) and the
Graduate Record Examinations, presume that the Norris-Ennis view is wrong;
the presumption is that many arguments have (unstated) necessary assumptions,
and that readers and test takers can reasonably be expected to identify such
assumptions. This paper proposes and defends criteria for determining
necessary assumptions of arguments, bring both theoretical and empirical
considerations to bear. The main criterion advocated and explained is the
"gap-filling criterion," which suggests that a necessary assumption fills a
gap in an argument's reasoning or inferential structure such that if the
assumption is presumed to be false, the logical cogency of the argument is
undercut. The criteria are applied to actual disclosed questions from the
LSAT. (Contains 1 table and 28 references.) (SLD)

$\mathcal{TM}$

■ On Testing for Assumption Recognition

Gilbert E. Plumer
Law School Admission Council

A Publication of the Law School Admission Council

Table of Contents

Executive Summary

On the LSAT there is an item subtype within the Logical Reasoning sections called the "Assumption" subtype. Questions of this subtype are designed to examine the test taker's ability to analyze an argument and, on logical grounds, determine which unstated assumptions are—together with the premises stated in the passage—*necessary* to establish the conclusion of the argument or *sufficient* to establish it. Sufficient-assumption test items have proven to be relatively unproblematic. Necessary-assumption test items are more controversial. The following remarks by Norris and Ennis are representative of a view that is not uncommon: "Although it is tempting to think that certain [unstated] assumptions are logically necessary for an argument or position, they are not. So do not ask for them ... no significant assumptions are logically necessarily made." Nevertheless, numerous writers of introductory logic texts, as well as various highly visible standardized tests such as the LSAT and GRE, presume without giving much (or any) justification that the Norris-Ennis view is wrong.

This paper proposes criteria for determining necessary assumptions of arguments, criteria that I think are correct in themselves in addition to being appropriate for writers and reviewers of the kind of test that the LSAT represents: a measure of advanced yet nontechnical reasoning and reading abilities using the format of multiple-choice questions. The main criterion that is advocated and explained is called the "gap-filling criterion." The idea is that a necessary assumption fills a gap in an argument's reasoning or inferential structure such that if the assumption is presumed to be *false* the logical *cogency* of the argument is undercut. The criteria presented are applied to actual disclosed questions from the LSAT.

The criteria that I propose are then defended against the kind of objections that Norris and Ennis raise, among other objections. One important objection is that there is always a logically viable narrower alternative (e.g., "all dogs whose name begins with 'M' are animals") to any putatively necessary assumption ("all dogs are animals") that renders it unnecessary (for the stated argument "since Mike is a dog, Mike is an animal"). My response, in essence, is that the specificity of the context and explicitly given argument *determines* the specificity of the necessary assumption; so if the former is in certain respects general, the necessary assumption is accordingly general.

The paper closes by canvassing empirical evidence that necessary-assumption test items that are constructed in keeping with the theoretical principles advocated are not distinctively problematic. The main evidence is that assumption items pretested on the LSAT are not rejected in content or statistical review, or identified as marginal, at a rate significantly different than that of items of other comparable Logical Reasoning subtypes that themselves are relatively uncontroversial.

Abstract

In their book, *Evaluating Critical Thinking*, Norris and Ennis say: "Although it is tempting to think that certain [unstated] assumptions are logically necessary for an argument or position, they are not. So do not ask for them" (1989, pp. 122-23). Numerous writers of introductory logic texts as well as various highly visible standardized tests (e.g., the LSAT and GRE) presume that the Norris-Ennis view is wrong: the presumption is that many arguments have (unstated) necessary assumptions and that readers and test takers can reasonably be expected to identify such assumptions. This paper proposes and defends criteria for determining necessary assumptions of arguments. Both theoretical and empirical considerations are brought to bear.

Introduction

In their book, *Evaluating Critical Thinking*, Norris and Ennis say: "Although it is tempting to think that certain [unstated] assumptions are logically necessary for an argument or position, they are not. So do not ask for them ... no significant assumptions are logically necessarily made" (1989, pp. 122-23; cf. Ennis, 1982, pp. 82-83). Ennis is the principal author of the Cornell Critical Thinking Tests and is very influential in the field of critical thinking education. Nevertheless, numerous writers of introductory logic texts (for example, Copi, 1978, p. 242; Fogelin, 1987, pp. 120-21; Kelly, 1988, p. 100; Scriven, 1976, pp. 43, 83, 166), as well as various highly visible standardized tests, presume without giving much (or any) justification that the Norris-Ennis view is

wrong: the presumption is that many arguments have (unstated) significant necessary assumptions and that readers and test takers can reasonably be expected to identify such assumptions. Two such standardized tests are the Law School Admission Test (LSAT) and the Graduate Record Examinations (GRE). This paper will propose criteria for determining necessary assumptions of arguments, criteria that I think are correct in themselves in addition to being appropriate for writers and reviewers of the kind of test that the LSAT represents: a measure of advanced yet nontechnical reasoning and reading abilities using the format of multiple-choice questions. The account will be defended against the kind of objections Norris and Ennis raise, among other objections. Both theoretical and empirical considerations will be brought to bear in the course of my argument.

Principal Necessary Assumption Criteria

On the LSAT, a typical necessary assumption question consists of a short argumentative passage, a question stem on the order of "The argument depends on assuming which one of the following?", and five answer choices. Notice that the focus is on the *argument*, rather than the *arguer*. Not only is the former more appropriate for logic (as opposed to psychology), but with no context other than the brief passage it would be unreasonable to ask the examinee to peer into the mind of the arguer to determine what the arguer is assuming.

This focus on the argument helps to rule out certain necessary assumption pretenders. One kind of pretender is that of a presupposition or implication of a propositional *element* of the argument, be it a premise or conclusion. The truth of some proposition p may be a necessary condition for the truth of a statement s in an argument or a necessary condition for a term in s to have a referent, etc., but this does not make p a necessary assumption of the argument. One reason is that p is not presupposed by the argument as a whole; a proposition must be integral to the *reasoning or inferential structure* of an argument, not just to a claim made within the argument, in order for the proposition to be a necessary assumption of the argument (specific examples will be discussed as we proceed). Another, sometimes related, kind of necessary assumption pretender is that of a general presupposition of rationality. For instance, that it is possible to do X is not a necessary assumption of an argument to the effect that X ought to be done, even given that *ought* implies *can*. At best, that it is possible to do X would be a presupposition of a propositional element of the argument, namely, the conclusion, and the putative conceptual truth that *ought* implies *can* would be a presupposition of something that is so to speak *larger* than any particular argument, namely, rationality itself (unless, of course, such is the subject matter of the argument). Similarly, neither should we hold that a perfectly general rule of inference such as *Modus Ponens* is a necessary assumption of an argument that instantiates *Modus Ponens*. If we do, we embark on an infinite regress akin to Lewis Carroll's (discussed below). These sorts of considerations function as some antidote to the view (apparently held by Govier, 1987, pp. 92-94; Grennan, 1994, p. 190) that no proposed set of necessary assumptions of an argument, if the set is finite, is big enough.

It is worth noting that after the criteria for determining necessary assumptions discussed in the preceding paragraph were developed, an LSAT examinee challenged a question on the grounds that the statement "the credited response refers to is not an assumption but something that is true by definition ... [it is] a given that is inherently true." This is in agreement with the criterion that a necessary assumption not be a presupposition of rationality. It turned out that the statement in question was not actually a definitional truth.

A criterion that is at least alluded to by virtually every writer on the subject is the idea that a necessary assumption must somehow fill a 'gap' in the stated argument's reasoning, thereby making the inference stronger than it otherwise would be. Burke (1985) provides a more precise way of stating the criterion: a necessary assumption is "any proposition which **needs to be true**, if the inference is to be justified." However, Burke himself rejects this as unhelpful on the grounds that there are "infinitely many" such propositions. "Examples: that there is at least one inference; that there is at least one justified inference; that there is at least one thing that

---

is either an inference or a polar bear" (p. 114). What this fact indicates is not that the gap-filling criterion is useless; instead, it indicates that the gap-filling criterion needs to be supplemented by other criteria. Because all of Burke's examples are presuppositions of rationality, or at least of the existence of rationality, none are necessary assumptions of any particular argument (unless, of course, such is the subject matter of the argument).

As far as I can see, the most precise and perspicacious way that the subject matter will bear of stating the gap-filling criterion (GFC) is as follows.

> GFC: It could not be the case both that the argument aside from the proposed necessary assumption is fully cogent and the proposed necessary assumption is false.

In the GFC the central meaning of the clause that 'the argument aside from the proposed necessary assumption is fully cogent' is that given the truth of what I will call the *received* premises (i.e., all of the implicit and explicit premises, considered apart from the proposed necessary assumption), the conclusion can be inferred to be true. The standard of an allowable inference here is to be taken as varying in stringency according to whether the argument is deductive (in which case validity is the standard) or nondeductive. Of course a nondeductive argument may have a conclusion that is in fact false, yet it may still be reasonable to infer that it is true from the truth of the premises. Cogency is perhaps a loose evaluative concept, but I take it to pertain only to an argument's reasoning or logic, not also to the truth value of its propositional elements (unlike the technical concept of soundness). And in no case is cogency purely a matter of formal validity. For example, adding the stated conclusion or the contradictory of a stated premise to the stated premises would make any argument formally valid. But the argument would lack cogency insofar as it grossly begs the question or engages in self-contradiction. In order to be fully cogent, it seems an argument must not commit any informal fallacy (that pertains to its reasoning).

I would hope that the rationale behind the GFC is fairly clear. Suppose the GFC is violated. That is, suppose that the proposed necessary assumption is false, and given the truth of the argument's received premises— premises that might, but need not, include an alternative to the proposed necessary assumption—the conclusion can still be inferred to be true in a fully cogent way. Then surely the proposed assumption does not figure in the argument's reasoning; for the proposed assumption does not have to be presumed to be true in order to so-infer that the argument's conclusion is true. Hence, it is not in fact a necessary assumption of the argument.

Notice that the GFC does not deny the logical truth that it could be the case both that an argument as a whole is fully cogent and an assumption of it is false. Unlike the GFC, this logical truth involves the notion that if all of the argument's premises, *including* the assumption, *were* true, the conclusion could be inferred to be true. Similarly, the question stem in Example I says, in effect, 'if the argument as a whole is fully cogent, then it must be assuming which one of the following?' (and Example III's question stem is just shorthand for Example I's); it does not say 'if the argument as a whole is fully cogent, then which one of the following must be *true*?' However, the point of the GFC is that the most critical and heuristically useful part of what the question stem means here is 'if the *explicitly given* argument is fully cogent, then which one of the following must be true?' The GFC thereby treats a necessary assumption as an 'inference license.' The general idea is that the same proposition may be treated both as an implicit element of an argument that *as a whole* is fully cogent and as a fact that helps to justify the inference in a *stated* argument that itself is fully cogent. Compare Sloman's conclusion that "any analysis of a particular argument in terms of a suppressed premiss may be replaced by an equally general analysis in terms of a rule of inference and *vice versa*" (1964, p. 88; cf. Hitchcock, 1985, esp. pp. 94-95; Scriven, 1976, pp. 83, 178; Smiley, 1995, esp. pp. 730-32). However, because such a proposition must contain at least one content expression (given the criterion that a necessary assumption not be a general presupposition of rationality), insofar as it is a rule of inference at all, it is a nonformal or specific rule of inference. Contrast, for example, *Modus Ponens*, which as topic-neutral is a formal or general rule of inference.

Example I (6/91 LSAT)†

Train service suffers when a railroad combines commuter and freight service. By dividing its attention between its freight and commuter customers, a railroad serves neither particularly well. Therefore, if a railroad is going to be a successful business, then it must concentrate exclusively on one of these two markets.

For the argument to be logically correct, it must make which one of the following assumptions?

(A)   Commuter and freight service have little in common with each other.
(B)   The first priority of a railroad is to be a successful business.
*(C)   Unless a railroad serves its customers well, it will not be a successful business.
(D)   If a railroad concentrates on commuter service, it will be a successful business.
(E)   Railroad commuters rarely want freight service as well.

$$(C): \quad p \rightarrow q$$
$$\text{---------}$$
$$q \rightarrow r$$
$$\overline{\therefore p \rightarrow r}$$

Example II (6/91 LSAT)†

It is even more important that we criticize democracies that have committed human rights violations than that we criticize dictatorships that have committed more violent human rights offenses. Human rights violations are always inexcusable, but those committed by governments that represent the will of the people are even more reprehensible than those committed by dictators. Further, our criticism is more likely to have an effect on the former than on the latter.

Which one of the following is a proper inference from the passage?

(A)   All governments commit some inexcusable and reprehensible acts.
*(B)   Some human rights violations are more reprehensible than other, more violent human rights violations.
(C)   Criticism of human rights violations is certain to have no effect on a dictatorship.
(D)   Human rights violations are more likely to occur in democracies than in dictatorships.
(E)   Those who do represent the will of the people are less likely to be moved by criticism than are those who merely claim to represent the will of the people.

---

† Copyright © 1991, 1992 by Law School Admission Council.
* Denotes the credited response.

8

Example III (2/92 LSAT)†

The brains of identical twins are genetically identical. When only one of a pair of identical twins is a schizophrenic, certain areas of the affected twin's brain are smaller than corresponding areas in the brain of the unaffected twin. No such differences are found when neither twin is schizophrenic. Therefore, this discovery provides definitive evidence that schizophrenia is caused by damage to the physical structure of the brain.

Which one of the following is an assumption required by the argument?

(A) The brain of a person suffering from schizophrenia is smaller than the brain of anyone not suffering from schizophrenia.
*(B) The relative smallness of certain parts of the brains of schizophrenics is not the result of schizophrenia or of medications used in its treatment.
(C) The brain of a person with an identical twin is no smaller, on average, than the brain of a person who is not a twin.
(D) When a pair of identical twins both suffer from schizophrenia, their brains are the same size.
(E) People who have an identical twin are no more likely to suffer from schizophrenia than those who do not.

There is apparently no better way of determining necessary assumptions. Consider the following necessary-assumption criterion (NAC):

NAC: A proposition is a necessary assumption of an argument if and only if it could not be the case both that the argument is fully cogent and the proposition is not included as a member of the argument's premise set.

While this criterion would not overtly need to be taken in conjunction with other criteria, unlike the GFC, in fact it does not get us substantially beyond the question stem in Example I. The NAC does clearly indicate that cogency is what assuming the proposition is *necessary for* (this idea will be discussed more fully later in a section titled "**Charity**"). But circularity is a problem since the members of an argument's premise set are its explicitly stated premises and its implicit premises (if any), and a premise that is determined to be implicit by logical means *just is* a necessary assumption.

The reader is warned that there will be little further theoretical treatment of the concept of cogency itself. A cogent argument is an argument that exhibits good reasoning, as determined by informal and, in the case of deduction, formal standards. It is not the point of this paper to elaborate in general terms on what makes an argument a good one, in this familiar sense. Indeed, it is hard to see how any mere paper could have this as a topic, since it is the defining subject matter of the discipline of logic (but see, e.g., Govier, 1992; Slaney, 1990). Of course, in elaborating and defending my criteria for determining necessary assumptions, I will have to wield a concept of a good (cogent) argument. Yet I do not think that my concept contains anything particularly controversial or unusual. Of course, if your concept differs from mine in some reasonable respect, you may make different reasonable judgments in the application of the criteria to individual cases. That is to be expected. But what is more important is the structure, not the details of how it is applied. Besides, logic is hardly distinguished among the various fields of philosophy and other humanities by its *lack* of intersubjective agreement. The very opposite is true.

---

† Copyright © 1991, 1992 by Law School Admission Council.
* Denotes the credited response.

Additionally, this paper shall also not be directly concerned with the matter of how one, in the first place, *finds* necessary assumption candidates (that can then be subjected to my criteria). Donn (1990) presents a procedure that is designed to help with this and that embodies a version, albeit a narrower one, of the GFC.

Application to LSAT Examples

Let us consider the examples from actual disclosed LSATs more closely. Option (C) in Example I is (I claim) the necessary assumption in a fairly straightforward case of Hypothetical Syllogism, a deductive pattern. Option (C) pretty clearly satisfies all the criteria discussed thus far. And specifically with respect to the GFC, consider that the conclusion in the argument claims that if a railroad combines commuter and freight service ($\sim r$), it will not be a successful business ($\sim p$). Why? The stated grounds are that combining commuter and freight service leads to a railroad's not serving its customers well ($\sim q$). If not serving its customers well did not in turn mean that a railroad will not be a successful business, that is, if (C) were false, then even given the truth of the stated premise, the conclusion could not be inferred to be true—it could be either true or false. This is not a matter of claiming that $q \to r$ ∴ $p \to r$ is invalid or that $\sim(p \to q)$, $q \to r$ ∴ $p \to r$ is invalid, although these claims are true. Nor is it a matter of claiming that $\sim(p \to q)$ logically or strictly implies $\sim((q \to r) \to (p \to r))$, which is a false claim. Rather, the claim is that if (C) were false, there would be no logically acceptable conclusion-warranting link between a problem that the argument describes as arising from a railroad's combining commuter and freight service, namely, not serving its customers well, and the question of whether a railroad will be a successful business:

In addition to being (I claim) necessary, (C) in Example I is, of course, also a *sufficient* assumption. It wholly fills the gap in the argument's reasoning. Certain other statements would be sufficient but not necessary, for example, the broader statement formed by substituting 'a business' for "a railroad" in (C); such a statement would go beyond providing everything implicit that the given argument depends on for full cogency. However, nothing in the context provided by the passage would justify attributing this greater generality to the argument; the passage is about railroads, not businesses in general. Indeed, nothing in the context would justify attributing any assumption other than (C) to the argument. To take another sort of case, suppose (C) said 'unless a railroad serves its customers well and stays in business for at least twenty years (s), it will not be a successful business' ($p \to (q \& s)$). To attribute this proposition to the argument as an assumption would be either to make the given argument lack cogency (which is contrary to the point of determining assumptions) or to construct a *different* (albeit cogent) argument, since a requirement for a railroad's being a successful business, viz., s, would be imported 'out of the blue' into the context. Perhaps the clearest way of seeing why (C) alone satisfies the GFC is to consider the fact that every other sufficient assumption of the argument implies (C), but none are implied by (C). Of course degenerate cases of sufficient assumptions such as the associated conditional or the conclusion of the explicit argument, which will be discussed in later sections, constitute exceptions in that they do not imply (C).

Another degenerate case is r. The assumption of r would make the stated argument formally valid. One commentator has actually objected that only through an *ad hoc* judgment about the cogency of arguments can r be ruled out as a rival to (C). However, the argument r, $q \to r$ ∴ $p \to r$ read with the passage's verbal substitutions is incoherent. This is probably because the assumption of r renders the stated premise ($q \to r$) entirely superfluous in deductively drawing the conclusion ($p \to r$ follows formally simply from r), making the argument commit a gross fallacy of irrelevance. I should like to insist that making such cogency judgments is an everyday occurrence that is well-grounded in the defining subject matter of the discipline of logic, and hence is hardly *ad hoc*.

Intuitively, it seems that option (B) in Example II is clearly *not* a necessary assumption of the passage's argument. This is hardly because (B) is a presupposition of rationality generally or of a single propositional element of the argument. Giving an account that at once both supports the sort of intuition we have in a case like (B) here and supports holding that the credited responses in cases like Examples I and III *are* necessary assumptions is perhaps the most interesting and vexing problem to be encountered in dealing with argument assumptions. Option (B) in Example II follows from the conjunction of the first and second sentences in the passage, which are the argument's conclusion and (first) premise, respectively (the passage's third sentence is a

premise that is independent of the first premise). Option (B) follows from these two sentences considered as independent statements, that is, in abstraction from the fact that they are related as premise and conclusion. This means that (B) has nothing to do with the argument's reasoning; i.e., its inferring the first sentence from the rest. Option (B) rectifies no lacuna in the argument's reasoning; it makes no contribution to the argument's cogency. (It may be worth remarking that the overt existential commitment of (B) derives from the argument in the passage through the fact that it could not be *important* to criticize democracies for certain actions unless those actions existed.)

A principal virtue of the GFC is that in general it rules out contingent (i.e., neither necessarily true nor necessarily false) implications or presuppositions of any propositional element of an argument or conjunction of these elements; Example II (B) is a case in point. In considering this it is to be understood that these elements are taken as independent propositions; they are taken in abstraction from any associated implicit or explicit argument-indicator terms such as 'thus' and 'since'. Otherwise, an implication could very well be a necessary assumption: the GFC gives a relatively clear meaning to the notion of being implied by an argument *qua* argument, that is, without the abstraction performed. [Compare the view of Hitchcock (1986): According to Govier (1992, p. 401), Hitchcock's view is that in order to be a necessary assumption a proposition "must follow 'deductively and reasonably immediately' from the combination of the stated premises, the stated conclusion, and the 'drawing of the conclusion from the premises'."] Since by definition contingent implications of propositional elements of arguments are already part of the content of the argument, the argument could quite well be fully cogent without reintroducing them into the argument individually as further members of its premise set. Such implications violate the GFC in the following way: Although if such a proposed necessary assumption is false the conjunction of the argument's conclusion and received premises is also false, this does not rule out the possibility that if the received premises *were* true the conclusion could be inferred to be true in a fully cogent way. Just as it is a logical truth that it could be the case both that an argument as a whole is fully cogent and the conjunction of its propositional elements is false, it is a logical truth that it could be the case both that an argument, considered apart from such an implication, is fully cogent and the implication is false. (Of course an exception arises from the curiosity that every proposition logically implies itself. If it is already established of something that it is a necessary assumption of an argument and is hence a propositional element of the argument, this curiosity does not mean that the proposition is not a necessary assumption of the argument.)

However, the GFC is not so powerful as to preclude any arbitrarily selected necessary truth from being counted as a necessary assumption; the same applies, for example, to the proposition that there is at least one fully cogent argument. So we still need, respectively, the criteria that a necessary assumption not be an implication of a propositional element of the argument or a general presupposition of rationality (assuming that not all general presuppositions of rationality are necessary truths). This points to a limitation of the account: It cannot be used to determine any necessarily true necessary assumptions, as of an argument that has other necessarily true propositional elements, for example, a mathematical argument. This is just a consequence of a so-called 'paradox' of logical implication—a necessary truth is implied by any proposition whatsoever. As far as I can see, the only alternative for determining such assumptions is the NAC (above). As for arguments that have necessarily false propositional elements, insofar as they would lack cogency in virtue of having such elements, it is not clear that these arguments could even have necessary assumptions (where cogency is what assuming the proposition would be *necessary for*).

This puts us in a position to answer a possible concern: Are the possibly infinite number of logical equivalents of a given necessary assumption of an argument themselves assumptions of the argument? Of course, if they are also synonymous with the given assumption, then the answer is *yes*, for they are the same assumption (e.g., I take 'if a railroad is going to be a successful business, then it serves its customers well' as logically equivalent and synonymous with option (C) in Example I's context). If they are not also synonymous with the given assumption, then I think we have to say they are not also assumptions of the argument (exactly because their semantical content is different from the given assumption), unless they are independently determined to be necessary assumptions (as in the case of a mathematical argument that has two or more necessarily true necessary assumptions).

In Example III, a clear case of nondeduction, I interpret the causal relationships propounded by the argument to be that damage to the physical structure of the brain is the common cause of both schizophrenia and the relative smallness of certain parts of the brains of schizophrenics. This is how the argument explains the "discovery," that is, the apparently perfect correlation of schizophrenia and the relative smallness, after in effect ruling out a genetic explanation. Option (B) contributes to the argument's cogency in an essential way by ruling out two further salient alternative explanations of this correlation. If the negation of (B) were the case, then (at least) one of these alternative explanations would be true, and it would fully explain the discovery or evidence without any need to appeal to a damaging mechanism, contrary to the claim made through the argument-indicator term "Therefore, this discovery provides definitive evidence that." So the GFC is satisfied. Note that (B) is not merely an implication of the statements in the passage, since these statements, considered in abstraction from the fact that they constitute an argument (excise "Therefore, this discovery provides definitive evidence that"), are entirely compatible with the negation of (B): the damage causes schizophrenia, and schizophrenia or the medications used in its treatment in turn cause the smallness. All of this presumes that the damage and the smallness are not the *same* phenomenon; if they were the same phenomenon, then (B) would not be a necessary assumption of the argument. (B) would simply be a presupposition or implication of the statement in the argument that "schizophrenia is caused by damage to the physical structure of the brain"; that is, the argument's conclusion.

Option (B) in Example III has the logical form *~(t v u)*. Does the GFC or the criterion that a necessary assumption not be a presupposition or implication of a propositional element of the argument mean that *~t* and *~u* each are not necessary assumptions? If *~(t v u)* is taken to be a necessary assumption, then of course neither *~t* nor *~u* is *also* a necessary assumption—the argument could quite well be fully cogent without either being included as a further member of its premise set. Conversely, if *~t* and *~u* are each taken to be necessary assumptions, then of course *~(t v u)* is not an additional necessary assumption. We can take either sort of approach in determining necessary assumptions, but we cannot take both. Determining necessary assumptions should not be confused with *proving validity*, which by definition involves the application of theorems and rules of inference such as those that form the backdrop of the present discussion, that is, De Morgan's, Simplification, and Conjunction.

Nor, it seems, is it a necessary assumption of the argument (e.g.) that the relative smallness is not the result of visitors from outer space picking out schizophrenics and shrinking parts of their brains with some ray gun. Allowing such propositions as necessary assumptions—propositions that are insufficiently relevant to the evident concerns of the argument (which have to do with science rather than science fiction)—would to some significant extent make the argument lack cogency. So they could hardly be necessary for the argument's cogency. If indeed the scenario envisioned is one of science fiction, then the proposed necessary assumption violates the GFC in that it could very well be the case both that the argument aside from this proposition is fully cogent in a scientifically respectable way and yet this proposition is 'false', that is, the alternative explanation is true only in science fiction. Moreover, the set of propositions that individually rule out questionably salient alternative explanations would be open-ended or infinite, and the set would be formed by applying a rule of Universal Instantiation to a supposed assumption in the argument to the effect that no other explanation is true. But this would amount to treating an argument that is manifestly nondeductive as deductive.

Narrowness Objection

It might be thought that no putatively necessary assumption (*n*) of an argument is actually necessary because there is always an alternative candidate (*c*)—a narrower version of *n*, or the explicit argument's associated conditional or even its conclusion—that logically would serve just as well as an assumption. It might appear that the existence of *c* makes it the case that *n* violates the GFC as follows: *n* could be false, yet if the received

premises—taken as including *c*—were true, the conclusion could be inferred to be true. Let us first examine the question of narrowness. Ennis says (1982, p. 82):

> The basic idea is that any incomplete argument can be completed in a number of different ways. Consider the simple argument, "Since Mike is a dog, Mike is an animal." To suggest the range of possible gap-fillers, I shall note two, the one that first occurs to most people [note this admission] and another one:
> 1. All dogs are animals.
> 2. All dogs whose name begins with "M" are animals.
>
> A person is not logically prohibited from offering the argument, denying 1, and using 2 as a gap-filler. This shows that 1 is not logically necessary for the offering of the argument. So long as the offered gap-filler is more general than a statement establishing connection between the offered premise and conclusion, one can deny the offered gap-filler and derive the conclusion from the offered premise by using a narrower gap-filler. The limiting case is the simple statement that the offered premise was assumed in the circumstances to be sufficient to establish the conclusion.

Though this view has its appeal, I think that it is highly misleading. It is a principle of rationality that similar cases are to be treated similarly. There is nothing in the context to indicate that Mike is in any way special with respect to being a dog. *Qua* dog, Mike is an arbitrarily selected individual. In logic the injunction to treat similar cases similarly is the rule of Universal Generalization (UG). The necessary (and sufficient) assumption here, 1 $((\forall x)(Dx \rightarrow Ax))$, is determined by the fact that UG applies to the stated argument's inference $(Dm \rightarrow Am)$. Therefore, it does not seem too strong to hold in this case that both "offering the argument" and "denying 1" would be self-contradictory. This means that 1 satisfies the GFC: it could not be the case both that the argument aside from 1 is fully cogent and 1 is false. Clearly, 1 satisfies the other criteria proposed above for determining necessary assumptions of arguments if we presume, as Ennis apparently does (p. 75), that 1 is not a necessary truth. If 1 were taken to be a necessary or conceptual truth such that the concept of animal is involved in the concept of dog, then it would not be at all clear that the stated argument has any gap that needs filling. As Govier says, we need to distinguish "formal deductive inference" from "substantive deductive inference. (Substantive deductive inference depends on meaning rather than on form.)... Nor should a necessary truth which relates the meanings of terms used in an argument already deductively valid without the addition of such a truth ... be regarded as a missing premise" (1987, pp. 96-97; cf., e.g., Hitchcock, 1985, pp. 85-86).

Notice that the argument "Since Mike is a dog, Mike is an animal" with 2 as the supposedly sufficient assumption (Ennis supposes it 'completes' the argument) is invalid. It would be valid if it had the more specific or narrower claim 'Mike is a dog whose name begins with "M"' as the explicit premise (such dogs constitute a proper subset of all dogs). Indeed, if this *were* the explicit premise, 2 *would* be the (unstated) necessary and sufficient assumption. The general principle operating here is that specificity that restricts the inferences licensed by the assumption is introduced by the narrower explicit premise, and the case becomes similar to that of Example I, as contrasted to a more general argument that has as a necessary assumption (C) with its "a railroad" replaced by 'a business.' Yet in the original argument ("Since Mike is a dog, Mike is an animal") and context, the *only* evidentiary claim made about Mike is that he is a dog. So what follows from this about Mike (that he is an animal) follows for any dog. Similarly, as Copi puts it, "In the geometer's proof the only assumption made about *ABC* is that it is a triangle, hence what is proved true of *ABC* is proved true of *any* triangle" (1978, p. 357); again, this is just UG at work. If this were not the case, it would be irrelevant to reply to such arguments by pointing out that just because an object has the property ascribed in the explicit premise (e.g., 'the show is a television production'), that does not make it the case that the object has the property ascribed in the conclusion ('the show is mentally numbing'), since various other objects have the former property but not the latter property (some shows on public television). A cost of adopting an Ennis-like view on necessary assumptions is a severe restriction on the legitimate use of counterexample and refutation by logical analogy.

Ennis appears to hold that aside from what he calls "The limiting case," there is always a logically viable narrower alternative to any putatively necessary assumption that renders it unnecessary. I have just argued that this view is false, mainly by arguing that the specificity of the context and explicitly given argument *determines* the specificity of the necessary assumption; so if the former is in certain respects general, the necessary assumption is accordingly general. Let us now consider "The limiting case."

Associated Conditional Objection

Presumably, "The limiting case" is the explicit argument's associated or corresponding conditional; in Ennis' example $Dm \therefore Am$, it is $Dm \rightarrow Am$. Ennis indicates that "an arguer is committed to at least this minimal claim" (p. 83), although such a claim is apparently only an 'insignificant' necessary assumption (as I quoted Norris and Ennis at the beginning of this paper). So the view I wish to consider, one that is suggested by Ennis' remarks, is that no putatively necessary assumption of an argument is actually necessary, unless it is already the explicit argument's associated conditional, since that conditional itself would make the argument fully cogent.

This view has the consequence that every natural language argument that is enthymematic with respect to its explicit premises is construable as an instance of pure *Modus Ponens*, which I think is absurd. Although in formal logic there are systems that incorporate only one rule of inference such as *Modus Ponens* (e.g., system R.S. in Copi, 1979, p. 228ff.), this hardly means that this sort of system could be an adequate representation of fundamental argument structure in ordinary discourse. In Example I, it is difficult to conceive of the whole argument in natural language where the assumption is taken to be the associated conditional of the argument stated in the passage. It is not at all clear that the whole argument would be fully cogent; it seems quite trivialized. From my point of view this is no surprise: The whole argument is a *paradigm* case of an everyday Hypothetical Syllogism. The same kind of remarks are perhaps even more convincing with respect to Example III, where there is the added specter of treating an obviously nondeductive argument (to the best explanation) as deductive. *Logic* is in part a study of arguments as they actually appear in ordinary discourse. Numerous distinct patterns of reasoning or regularities in argument structure have been identified. To allow this, yet hold that all ordinary arguments that are enthymematic with respect to their explicit premises could exhibit the single pattern, *Modus Ponens*, seems inconsistent. Why should recognizing the pattern of reasoning in such an enthymematic argument be so radically different from pattern recognition in other endeavors where the explicit or presented pattern is only partial (e.g., continuing a numerical sequence or recognizing a friend in a photographic profile)? The patterns identified are hardly all the same in any of these latter endeavors. In such a way as this at least, the credited responses in cases like Examples I and III are assumptions that are '*logically* necessarily made.'

Let P stand for the conjunction of an argument's explicit premises; C stand for the argument's conclusion (taken to be explicit); and I stand for the conjunction of the argument's implicit premises or necessary assumptions, if any. That an argument has the form $P, I \therefore C$ rather than simply $P \therefore C$ by itself provides no particular reason for identifying I with $P \rightarrow C$; that is, the explicit argument's associated conditional. The only thing that could warrant this identification would be some aspect of the argument's context, such as that Mike is somehow a special, nonarbitrarily selected dog in the case of $Dm \therefore Am$. In that case, the whole argument would be the pure *Modus Ponens*, $Dm \rightarrow Am$, $Dm \therefore Am$, rather than as I am construing it, namely, $(\forall x)(Dx \rightarrow Ax)$, $Dm \therefore Am$ (in my construal, $Dm \rightarrow Am$ is not also a necessary assumption of the argument since it is an implication of a propositional element of the argument, viz., $(\forall x)(Dx \rightarrow Ax)$; recall the earlier point that determining necessary assumptions should not be confused with proving validity). But instances of pure *Modus Ponens* wherein the major premise is implicit ($P \therefore C$, with $P \rightarrow C$ implicit) must constitute the exception and not the rule, especially if we take, as many do (see below), the implicit premise here to simply replicate or be "reiterative" of the implication relationship of the explicit argument. This reiteration would make the argument self-referential, and the self-referential case's being exceptional is to be expected in light of the numerous paradoxes of self-reference (e.g., the liar paradox concerning the claim 'this statement is false,' and Russell's paradox, which concerns the set property of being self-membered; for discussion, see, e.g., Priest, 1994). The rule, on the other hand, would have to be that it is in fact *incoherent* to identify I with $P \rightarrow C$: That an argument is *enthymematic* with respect to its explicit premises means that the conclusion is *not* implied by these premises

alone; more premise material is needed in order to properly infer the conclusion—that is precisely how the argument is enthymematic or "incomplete." This is to say $P \rightarrow C$ *only if* $S_1 v...S_n$—where $S_1 v...S_n$ is the disjunction of the possible sufficient assumptions of the enthymematic argument, none of which is identical to $P \rightarrow C$. So if none of $S_1...S_n$ were acceptable, neither would $P \rightarrow C$ be acceptable. (The criteria proposed in this paper are meant to be usable to determine which of $S_1 ... S_n$ is necessary; i.e., is identical to I.)

It is therefore at least very misleading to affirm the widespread view that "we may add the reiterative candidate [i.e., add $P \rightarrow C$ to an argument that has the form $P, I \therefore C$]. This is always unobjectionable, since the acceptability of the reiterative candidate is a necessary condition of the acceptability of the argument." (The view does correctly go on to say that this adding is "never useful, in regard to facilitating evaluation, since it is never easier to evaluate the reiterative candidate than to evaluate the corresponding inference." Burke, 1985, pp. 108, 116. See also Gilbert, 1991, p. 160; Hitchcock, 1985, pp. 86, 89; Jacquette, 1994, pp. 2, 9-10, 15; Scriven, 1976, pp. 84, 163-64.) We have just seen the problem with identifying I with $P \rightarrow C$. Yet if these are not identified, then adding $P \rightarrow C$ would at least make I superfluous with respect to drawing the conclusion, so in what sense could I be a set of implicit premises or necessary assumptions? I think the view is confused about why the enthymematic argument or arguer is, as Ennis puts it, "committed" to $P \rightarrow C$. It is not because $P \therefore C$ is stated and $P \rightarrow C$ just 'reiterates' the implication relationship of this statement. Instead, as a rule it is because the argument's being enthymematic means that it has an implicit premise set I ($\neq P \rightarrow C$), and that P, when conjoined with I, implies C (($P \& I) \rightarrow C$). By Commutation and Exportation this is equivalent to $I \rightarrow (P \rightarrow C)$, and of course there is commitment to I; as in Example I, $p \rightarrow q$ implies $(q \rightarrow r) \rightarrow (p \rightarrow r)$. (It seems that these points apply to nondeductive arguments where '$\rightarrow$' is read as, e.g., 'probabilifies.') However, even though there is commitment to $P \rightarrow C$, $P \rightarrow C$ is not a further necessary assumption of the argument precisely because it is implied by what is already, by supposition, a propositional element or conjunction of such elements of the argument, namely, I.

Some may even think that one can freely add the associated conditional ($P \rightarrow C$) to *non*enthymematic arguments. If this is done with the justification that "*all* arguments depend upon the 'assumption' that you can get from their specific premises to their specific conclusions" (Scriven, 1976, p. 84), then one has embarked on Lewis Carroll's infinite regress, which in the example Carroll presents (1895, pp. 278-79) has the form:

A: $(\forall x)(\forall y)(\forall z) (((x = z) \& (y = z)) \rightarrow (x = y))$

B: $(a = c) \& (b = c)$

C: $(A \& B) \rightarrow Z$

D: $(A \& B \& C) \rightarrow Z$

.
.
.

$\therefore Z$: $a = b$

The vertical margin dots represent an infinite series of recursive iterations in the manner of premises C and D.

It is worth noting that the idea that in a pure *Modus Ponens* an implicit major premise simply 'reiterates' the implication relationship of the explicit argument is subject to the following kind of objection: The implication relationship between the premises and conclusion of the argument is strict or tautological implication, whereas the implication between the antecedent and consequent of the major premise may be something less, such as causal implication or truth-functional (material) implication. This point raises hoary issues that cannot be addressed here, such as how adequate a representation of natural language is the purely truth-functional account of conditionality.

Charity

Let us consider how charity enters the picture. To attribute Ennis' "gap-filler" 2, "All dogs whose name begins with 'M' are animals," to the argument "Since Mike is a dog, Mike is an animal" would violate any reasonable principle of charity. This is not merely because this "gap-filler" would make the argument invalid; it is more generally because the attribution would come totally 'out of the blue.' There is simply nothing in the barren context presented to justify such an attribution. The attribution of 2 would make the argument as a whole very strange—how could the character of a dog's given proper name have anything to do with the dog's being an animal?

It was noted earlier that necessary truths trivially satisfy the GFC. The other half of the story is that any proposed necessary assumption of an argument that is wholly or irredeemably fallacious will trivially satisfy the GFC, simply because the argument could not be fully cogent and remain the same argument. The avoidance of this trivial satisfaction constitutes one reason it is crucial to see that in the very act of attributing a proposition to an argument as a necessary assumption (in the sense explained above) one presumes that the argument is cogent, and thereby interprets it charitably, to at least some extent. Cogency is what assuming the proposition is *necessary for*; the proposition fills a gap in the explicit argument's reasoning, thereby making the reasoning stronger than it otherwise would be (although it could still be weak or fallacious in other respects). A necessary assumption *contributes* to an argument's cogency, and a necessary and sufficient assumption completes the argument so that it is fully cogent. This means that it would be incoherent to treat as necessary and/or sufficient assumptions of arguments such propositions as the argument's stated conclusion or the contradictory of a stated premise. For this would be to uncharitably treat the argument as irredeemably fallacious in grossly begging the question or engaging in self-contradiction, even though such candidates would make the argument formally valid. Moreover, therefore, one cannot maintain that any putatively necessary assumption is rendered unnecessary by the fact that such an alternative candidate logically would serve just as well as an assumption.

It seems that for arguments that are enthymematic with respect to their explicit premises, the question of which are cogent enough to have necessary assumptions and which are wholly fallacious is a matter that is determined by the application of a reasonable *principle* of charity. It is true that attempts have been made to determine this matter solely by examining features of the explicit arguments themselves and not invoking a principle of charity (George, 1972 and 1983; Hitchcock, 1985). A starting point is the proposition that a gross *non sequitur* does not have any content expression or nonlogical constant in common between the conclusion and the stated premises (and such an expression could not be produced by making definitionally equivalent substitutions). However, the attempts have been limited to deduction, and even there they seem unsatisfactory (Govier, 1992, p. 402n9; Hitchcock, 1985; Kapitan, 1980, pp 56-59).

Govier presents what I regard as an adequate and insightful theory of argumentative charity. After reviewing the literature, Govier (1987, p. 150) proposes and defends in detail a moderate principle of charity (that takes its cue from H.P. Grice's "Logic and Conversation"):

> We presume, other things being equal, that others are participating in the social practise of rational argumentation ... They are operating within the purpose of the exchange, that is, it is their purpose to communicate information, acceptable opinions and reasonable beliefs, and to provide good reasons for some of these opinions and beliefs by offering good arguments ... The basis for charity is to be found not in ethics, prudence, or epistemology, but in the nature and purpose of the activity in which participants are engaging: argumentative discourse. That people are doing this when they appear to be is a rebuttable presumption ... If for one reason or another, the presumption would not be appropriate—the people lacking all credibility, or the context being one where people seek persuasion at any cost—then there is no reason for approaching the discourse charitably—not even moderately charitably.

In ordinary situations this principle can be effectively applied because the context of the enthymematic argument is rich enough to determine whether the arguer is engaged in the social practice of rational argumentation. However, with respect to short passages that appear on an examination like the LSAT (and other

comparably attenuated situations), the matter is often indeterminate. Then it is up to the test writer to somewhat arbitrarily decide whether to develop the rest of the test item as a necessary assumption question or as a question that asks the examinee to identify a way in which the argument is fallacious; Example III is a case of this. From the point of view of examinees, the charity issue is already decided for them by which of these two sorts of questions they confront.

So an Ennis-like view on necessary assumptions seems correct in one way: it is ill-advised to ask for the identification of a necessary assumption of an argument that is clearly wholly fallacious. As we have seen, in the very act of attributing a proposition to an argument as a necessary assumption, one presumes that the argument is cogent to at least some extent. Yet is there any reasonable standard of necessity other than this cogency standard? It often seems plausible to hold that the *reasoning* of an argument is flawed because of an assumption the argument makes, in that the assumption clearly stands in need of justification and the argument fails to provide it. The claim the assumption makes is obviously questionable, given its content and the circumstances in which it is made; but insofar as the claim still contributes to what cogency the argument has by filling a gap in the stated argument's reasoning, there has been no change in standards.

There may, however, be a veritable alternative candidate: that which is needed to fill out an instantiation of an established fallacious pattern of reasoning. The standard of necessity is *being a proper part of a fallacious pattern*. Surely, circumstances sometimes allow us to determine, for example, that an argument that explicitly says $p \rightarrow q \therefore p$ is assuming q. And *perhaps* the case could be made that the argument (taken as deductive) is *less* cogent when regarded as assuming q than when regarded as making no assumption. But I do not see any acceptable way of asking for the identification of such necessary assumptions on a test like the LSAT or in a comparable situation. If the question said 'Which one of the following completes the fallacious pattern of reasoning above?', a noncredited response could not be neutral with respect to cogency or irrelevant, since then it would be correct for a different, unintended fallacious pattern or fallacy of irrelevance; rather, the noncredited responses would each have to help make the passage's argument more cogent. It seems that such test items would be very difficult to write if not incoherent. The question could not simply be on the order of 'The fallacious argument above relies on the assumption that,' since the unintended cogency standard of necessity is so prominent. There is nothing to prevent the examinee from looking for a proposition that makes the fallacious reasoning stronger than it otherwise would be. Indeed, insofar as in ordinary discourse one normally takes into account the larger context or text before conclusively deciding that an argument is fallacious, one is inclined toward being charitable when a short passage is all the evidence that one has.

The Norris-Ennis alternative to asking for the identification of necessary assumptions, since they think that no significant assumptions are actually necessary, is to ask of several options "which is probably taken for granted or assumed" (p. 124). Such a question would be seriously unclear: the assumption is probable relative to what? Certainly, it is probable relative to the given argument, but why not also to psychological facts about arguers and facts about relevant aspects of the world in general? Such questions would appear to take a large step in the direction of *achievement* (knowledge) testing, as opposed to the intended *aptitude* testing for a particular reasoning skill (assumption recognition).

Theory Summary

To summarize, in determining necessary assumptions of arguments—necessary, that is, for their cogency—one first applies the principle of charity; and only if this yields the result that the argument is not wholly fallacious does one apply the other criteria, viz., that a necessary assumption must not be a presupposition of rationality generally or of a propositional element of the argument, and that it must satisfy the GFC. I think these criteria are appropriately used by writers and reviewers of a test like the LSAT to determine the credited response in a question that asks for a necessary assumption of an argument. This is not to say, however, that kinds of cases like what have been identified above as 'necessary assumption pretenders' could legitimately be used as noncredited responses in such test questions. The ordinary concept of an assumption seems too vague or amorphous to reasonably permit, for instance, a presupposition or implication of an argument's stated conclusion as a noncredited response.

Empirical Considerations

So much for the theory. How have the principles articulated fared in practice? It is fairly rare that a philosophical theory can be (even indirectly) tested against systematic empirical data. but with some qualification this is the case here. Consider the following table.

Subtype performance

Item Subtype	Number Pretested	Percent Rejected for Statistical Reasons	Percent Rejected for Content Reasons	Percent Identified as Marginal
Assumption	355	8	12	21
Inference	393	7	18	24
Flaw	378	8	14	15
Evidence	453	7	9	13

The column farthest to the left includes names of the three test item subtypes that are most akin to the Assumption subtype. All four subtypes appear within the "Logical Reasoning" (informal logic) sections of the LSAT. One qualification is that the Assumption category includes a minority of *sufficient* assumption test items; they ask, for example, "The conclusion above follows logically if which one of the following is assumed?" Test questions of the Inference subtype ask the examinee to identify allowable inferences from given passage material; Example II is an item of this subtype. Flaw questions typically ask the examinee to identify a way in which an argument is fallacious. In Evidence questions the task is to determine the logical effect of additional or independent evidence—whether it supports or undermines—a given argument, conclusion, or hypothesis, etc. (for more discussion of the kinds of questions that appear on the LSAT, see the *LSAT/LSDAS Registration and Information Book*). The Number Pretested column gives the number of test items of the subtype that were pretested from June 1991 to February 1996. Before any test item is used in a scored section of an LSAT exam, it appears in an unscored section of a previous LSAT; this is known as "pretesting." The purpose is to determine the item's psychometric statistical characteristics so that if these are acceptable, the item can later be incorporated according to specification into a section that will be scored. The next column gives the percentage of the test items of the subtype that were pretested and thereby found to be statistically unusable on the basis of a three-parameter Logistic Item Response Theory model. The three parameters are measures, roughly speaking, of (a) how well the item discriminates among examinees of differing ability, (b) how difficult the item is, and (c) the probability of examinees of very low ability answering the item correctly, perhaps by guessing (a standard reference work is Lord, 1980). The next column gives the percentage of the test items of the subtype that were rejected in a content review conducted subsequent to pretesting (most content reviews are performed prior to pretesting). Usually, the reason for rejection is that the item was found to have more than one correct answer on a certain interpretation or to have no correct answer that is clearly defensible. The column farthest to the right gives the percentage of the test items of the subtype that were pretested and thereby found to be statistically marginal, primarily by using the various measures of Item Response Theory, as well as Classical theory (e.g., how well performance on the item correlates with performance on the test section as a whole; a standard reference work is Lord & Novick, 1968). There is some overlap between the test items that were rejected for statistical reasons and those that were rejected for content reasons, and between those identified as marginal and those that were rejected for content reasons.

The point is, if a view about necessary assumptions like Norris and Ennis' were correct, one might very well expect that the performance of the Assumption subtype would be significantly worse than that of the other subtypes—kinds of questions to which they raise no comparable objections. Indeed, Norris and Ennis say, "the word 'necessarily' [or an equivalent] in the direction would at least slow down some good critical thinkers and force them to waste time. It might also force them to omit the item or guess wildly" (p. 123). But I have seen no evidence of this in the 10 years I have participated in developing and applying the kind of criteria advocated in

this paper to the LSAT; as the table indicates, content and psychometric statistical analyses of necessary assumption test questions yield results that are as good as those for other comparable kinds of questions designed to assess reasoning abilities.

Another consideration is that aside from the case of a special administration of the LSAT, every examinee receives a copy of the LSAT test questions along with her or his scored answer sheet. This convenience leads to careful scrutiny of test questions, if for no other reason than that law schools assign a great deal of weight to the candidate's test score in the admission process. There is an established procedure under which examinees can challenge test questions and written defenses of test questions, including asking for a review by a panel of outside experts. If this panel rules against the test, then an expensive process of rescoring and issuing new score reports is initiated. This is a relatively rare circumstance in which philosophical theory is concretely and publicly *accountable*. (In a review of a recent challenge and defense of a necessary assumption test question, a panel member wrote: "'depends on' is hardly a technical term requiring training in logic ... The Law Services response that (A) is the only assumption on which the argument *depends* is correct. (A), and only (A), is such that if we presume it to be false the argument is undercut." Note the language of the GFC.) Developing any standardized test item is an expensive process in any case, so if necessary assumption test items were challenged, let alone successfully challenged, proportionately more often than other kinds of questions designed to assess reasoning abilities, or if they performed significantly worse in content or statistical review, there would be a strong incentive simply not to use them. But we do use them. This context of developing a standardized reasoning and reading test has provided an organized setting in which actually to engage in the Goodmanian-Rawlsian project of endeavoring to achieve a "reflective equilibrium" (Goodman, 1983, part III.2; Rawls, 1971, p. 20ff.), where theoretical criteria or principles on the one hand, and particular judgments (about arguments) on the other, are brought into coherence with one another, and thereby each is afforded justification.

References

Burke, M. (1985). Unstated premises. *Informal Logic, 7*, 107-118.

Carroll, L. (1895). What the tortoise said to Achilles. *Mind, 4*, 278-80.

Copi, I. (1978). *Introduction to Logic* (5th ed.). New York: Macmillan.

Copi, I. (1979). *Symbolic Logic* (5th ed.). New York: Macmillan.

Donn, M. (1990). Help in finding missing premises. *Teaching Philosophy, 13*, 159-64.

Ennis, R.H. (1982). Identifying implicit assumptions. *Synthese, 51*, 61-86.

Fogelin, R. (1987). *Understanding Arguments* (3rd ed.). New York: Harcourt Brace Javanovich.

George, R. (1972). Enthymematic consequence. *American Philosophical Quarterly, 9*, 113-16.

George, R. (1983). Bolzano's consequence, relevance, and enthymemes. *Journal of Philosophical Logic, 12*, 298-318.

Gilbert, M.A. (1991). The enthymeme buster: A heuristic procedure for position exploration in dialogic dispute. *Informal Logic, 13*, 159-66.

Goodman, N. (1983). *Fact, Fiction, and Forecast* (4th ed.). Harvard University Press.

Govier, T. (1987). *Problems in Argument Analysis and Evaluation*. Dordrecht: Foris.

Govier, T. (1992). What is a good argument? *Metaphilosophy, 23*, 393-409.

Grennan, W. (1994). Are "gap-fillers" missing premises? *Informal Logic, 16,* 185-96.

Hitchcock, D. (1985). Enthymematic arguments. *Informal Logic, 7,* 83-97.

Hitchcock, D. (1986, December). *Methodological deductivism.* Paper presented at the annual Eastern Division meetings of the American Philosophical Association.

Jacquette, D. (1994, June). *Charity and the reiteration problem for enthymemes.* Paper presented at the Third International Conference on Argumentation, Amsterdam.

Kapitan, T. (1980). A definition of enthymematic consequence. *International Logic Review, 9,* 56-59.

Kelly, D. (1988). *The Art of Reasoning.* New York: W.W. Norton & Co.

Lord, F.M., & Novick, M.R. (1968). *Statistical Theories of Mental Test Scores.* Reading, MA: Addison-Wesley.

Lord, F.M. (1980). *Applications of Item Response Theory to Practical Testing Problems.* Hillsdale, NJ: Lawrence Erlbaum.

Norris, S., & Ennis, R.H. (1989). *Evaluating Critical Thinking.* Pacific Grove, CA: Midwest Publications.

Priest, G. (1994). The structure of the paradoxes of self-reference. *Mind, 103,* 25-34.

Rawls, J. (1971). *A Theory of Justice.* Harvard University Press.

Scriven, M. (1976). *Reasoning.* New York: McGraw-Hill.

Slaney, J. (1990). A general logic. *Australasian Journal of Philosophy, 68,* 74-88.

Sloman, A. (1964). Rules of inference, or suppressed premises? *Mind, 73,* 84-96.

Smiley, T. (1995). A tale of two tortoises. *Mind, 104,* 725-35.